

What is claimed as new and desired to be protected by Letters Patent of the United States is:

1. A method of observing a specimen in a field of view of an electron microscope comprising the acts of:

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setting the magnification of said electron microscope;

setting conditions for moving said field of view;

setting a starting position for said field of view;

moving said field of view based upon said condition;

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illuminating said specimen with an electron beam having a first angle and forming a first transmission image of said specimen in said field of

view;

adjusting said electron beam to a second angle and forming a second transmission image of said specimen in said field of view; and

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calculating a degree of coincidence between said first and second transmission images.

2. The method of claim 1 wherein said calculating is performed utilizing a phase only correlation.

3. The method of claim 1 wherein said calculating is performed utilizing an phase-amplitude correlation.

4. The method of claim 1 wherein said field of view is not observed when said degree of coincidence is equal to 100 or 0.

5 5. The method of claim 4 further comprising the act of comparing said condition with preset values for said condition when said degree of coincidence is equal to 100 or 0.

6. The method of claim 5 further comprising the act of adjusting said condition to said preset value when said condition is not at said preset value.

10 7. The method of claim 1 wherein said field of view is observed when said degree of coincidence is in between, but not including, 100 to 0.

8. The method of claim 7 wherein said field of view is observed when said degree of coincidence is in between, but not including, 5 to 0.

15 9. The method of claim 8 further comprising the act of determining whether a desired form pattern is present in said field of view.

10. The method of claim 7 wherein said field of view is observed when said degree of coincidence is in between, but not including, 100 to 5.

11. The method of claim 10 further comprising the act of performing automatic focus correction of said first and second transmission images.

12. The method of claim 11 further comprising the act of forming a line profile of said first and second transmission images.

5 13. The method of claim 12 further comprising the act of observing said field of view when said line profile has a contrast greater than about 1.4.

14. A method of observing a specimen in a field of view of an electron microscope comprising the acts of:

10 setting the magnification of said electron microscope;

setting conditions for moving said field of view;

setting a starting position for said field of view;

moving said field of view based upon said condition;

15 illuminating said specimen with an electron beam in one direction and forming a line profile transmission image of said specimen in said field of view; and

observing said field of view if a change in brightness in said line

profile is found.

15. The method of claim 14 further comprising the act of comparing said condition with preset values for said condition if there is no change in said line profile.

5 16. The method of claim 15 further comprising the act of adjusting said condition to said preset value when said condition is not at said preset value.

17. A method of observing a specimen in a field of view of an electron microscope comprising the acts of:

setting the magnification of said electron microscope;

10 setting conditions for moving said field of view;

setting a starting position for said field of view;

moving said field of view based upon said condition;

illuminating said specimen with an electron beam and forming a transmission image of said specimen in said field of view;

15 selecting a pattern from said transmission image and matching said selected pattern with a preset pattern; and

observing said field of view if a match is found between said selected pattern and said preset pattern.

18. The method of claim 17 further comprising the act of counting said match.

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19. An electron microscope comprising:

a support for supporting a specimen;
a deflector for deflecting an electron beam to said specimen to create
a transmission image;

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a processor coupled to said image pickup device being programmed for observing a specimen in a field of view of an electron microscope, said programming comprising the acts of:

setting the magnification of said electron microscope;

setting conditions for moving said field of view;

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setting a starting position for said field of view;

moving said field of view based upon said condition;

illuminating said specimen with an electron beam having a first angle and forming a first transmission image of said specimen in said field of view;

adjusting said electron beam to a second angle and forming a second transmission image of said specimen in said field of view; and

calculating a degree of coincidence between said first and second transmission images.

20. The device of claim 19 wherein said calculating is performed utilizing a phase only correlation.

10 21. The device of claim 19 wherein said calculating is performed utilizing an phase-amplitude correlation.

22. The device of claim 19 wherein said field of view is not observed when said degree of coincidence is equal to 100 or 0.

15 23. The device of claim 22 further comprising the act of comparing said condition with preset values for said condition when said degree of coincidence is equal to 100 or 0.

24. The device of claim 23 further comprising the act of adjusting said condition to said preset value when said condition is not at said preset value.

25. The device of claim 19 wherein said field of view is observed when said degree of coincidence is in between, but not including, 100 to 0.

26. The device of claim 25 wherein said field of view is observed when said degree of coincidence is in between, but not including, 5 to 0.

5 27. The device of claim 26 further comprising the act of determining whether a desired form pattern is present in said field of view.

28. The device of claim 25 wherein said field of view is observed when said degree of coincidence is in between, but not including, 100 to 5.

10 29. The device of claim 28 further comprising the act of performing automatic focus correction of said first and second transmission images.

30. The device of claim 29 further comprising the act of forming a line profile of said first and second transmission images.

31. The device of claim 30 further comprising the act of observing said field of view when said line profile has a contrast greater than about 1.4.

15 32. An electron microscope comprising:
a support for supporting a specimen;
a deflector for deflecting an electron beam to said specimen to create

a transmission image;

an image pickup device for obtaining said transmission image; and

a processor coupled to said image pickup device being programmed for observing a specimen in a field of view of an electron microscope, said programming comprising the acts of:

5 setting the magnification of said electron microscope;

setting conditions for moving said field of view;

setting a starting position for said field of view;

moving said field of view based upon said condition;

10 illuminating said specimen with an electron beam in one direction and forming a line profile transmission image of said specimen in said field of view; and

observing said field of view if a change in brightness in said line profile is found.

15 33. The device of claim 32 further comprising the act of comparing said condition with preset values for said condition if there is no change in said line profile.

34. The device of claim 33 further comprising the act of adjusting said condition to said preset value when said condition is not at said preset value.

35. An electron microscope comprising:

a support for supporting a specimen;

5 a deflector for deflecting an electron beam to said specimen to create a transmission image;

an image pickup device for obtaining said transmission image; and

a processor coupled to said image pickup device being programmed for observing a specimen in a field of view of an electron microscope, said programming comprising the acts of:

10 setting the magnification of said electron microscope;

setting conditions for moving said field of view;

setting a starting position for said field of view;

moving said field of view based upon said condition;

15 illuminating said specimen with an electron beam and forming a transmission image of said specimen in said field of view;

selecting a pattern from said transmission image and matching said selected pattern with a preset pattern; and

observing said field of view if a match is found between said selected pattern and said preset pattern.

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36. The device of claim 35 further comprising the act of counting said match.